

Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
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ICD-10 C01-C06: Oral region cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	4,383
Diseases	4,449
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m



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<https://www.tumorregister-muenchen.de/en>

<https://www.tumorregister-muenchen.de/en/facts/base/bC0106E-ICD-10-C01-C06-Oral-region-cancer-incidence-and-mortality.pdf>

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**Global Statements about the statistics on the Internet –
Baseline Statistics** (grey button ) , **Survival** (red button )

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.69 million inhabitants, account for the frequency of cancer diseases^{##} and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases^{###} are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, January 2021

[#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).

^{##} Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

^{###} DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

Some remarks regarding this cancer type

As a general rule, these few results from the TRM form the basis of sophisticated analyses. For head and neck tumors this is not the case. Therefore the results for head and neck tumors should be interpreted with caution. In part this is due to problems of classification because of limited specific details of locality. Additionally, with advanced tumors in a close topographic location it is often not possible to determine the exact ICD localization of a tumor.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C01	Malignant neoplasm of base of tongue
C02.-	Malignant neoplasm of other and unspecified parts of tongue
C03.-	Malignant neoplasm of gum
C04.-	Malignant neoplasm of floor of mouth
C05.-	Malignant neoplasm of palate
C06.-	Malignant neoplasm of other and unspecified parts of mouth

INCIDENCE

Table 1

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (ALL PATIENTS) (incl. DCO)

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	127	7	5.5	14.2	18.0	83.5	99.2
1999	135	6	4.4	14.5	17.9	83.0	96.3
2000	120	6	5.0	12.8	17.6	77.5	98.3
2001	132	8	6.1	12.6	17.5	84.1	98.5
2002	209	12	5.7	13.3	17.1	79.4	98.1 #
2003	221	14	6.3	14.2	17.0	81.0	99.5
2004	227	10	4.4	14.1	16.1	76.2	97.4
2005	189	9	4.8	14.5	15.6	75.1	95.8
2006	218	5	2.3	14.8	15.3	76.1	96.3
2007	262	11	4.2	14.8	14.7	71.4	93.5 #
2008	267	8	3.0	15.4	14.2	69.7	97.8
2009	278	5	1.8	16.1	13.7	67.3	97.5
2010	299	14	4.7	16.1	12.9	66.2	98.7
2011	244	7	2.9	16.6	12.0	58.2	97.5
2012	272	9	3.3	16.9	10.8	52.6	98.2
2013	302	7	2.3	17.1	10.2	55.3	98.0
2014	248	10	4.0	17.5	10.0	53.6	96.4
2015	246	7	2.8	17.6	9.3	50.4	95.5
2016	175	4	2.3	18.0	10.7	47.4	100.0
2017	136	4	2.9	18.6	8.1	35.3	100.0
2018	88	3	3.4	18.9	7.4	30.7	100.0
2019	54	1	1.9	18.9	7.8	33.3	79.6 ##
1998-2019	4449	167	3.8	18.9	18.0	65.0	97.3

4,449 cases diagnosed 1998-2019 are related to a total of 4,383 patients. Currently, in 1,537 (35.1 %) of these 4,383 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,145 / 296 / 96 (26.1 % / 6.8 % / 2.2 %) patients exist having 2 / 3 / 4+ malignancies.

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 136 cases has been diagnosed, of which 18.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (MALES) (incl. DCO)

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	86	67.7	5	5.8	16.3	18.6	86.0	98.8
1999	83	61.5	2	2.4	16.0	18.4	84.3	95.2
2000	88	73.3	6	6.8	13.6	18.0	81.8	98.9
2001	92	69.7	6	6.5	13.2	18.1	88.0	98.9
2002	142	67.9	7	4.9	13.4	17.7	80.3	97.2 #
2003	160	72.4	10	6.3	14.9	17.4	82.5	100.0
2004	159	70.0	6	3.8	14.8	16.5	74.8	96.9
2005	128	67.7	5	3.9	15.1	16.0	73.4	96.1
2006	150	68.8	4	2.7	15.3	15.7	84.0	96.7
2007	184	70.2	7	3.8	15.7	15.0	73.4	93.5 #
2008	179	67.0	6	3.4	16.4	14.6	71.5	98.3
2009	181	65.1	3	1.7	17.1	14.1	72.4	97.8
2010	205	68.6	11	5.4	17.3	13.1	67.3	99.0
2011	161	66.0	5	3.1	17.6	12.3	65.2	98.1
2012	182	66.9	7	3.8	18.1	10.5	54.4	98.9
2013	207	68.5	6	2.9	18.2	9.8	57.5	99.0
2014	169	68.1	7	4.1	18.7	9.5	57.4	97.6
2015	168	68.3	6	3.6	18.9	9.0	48.2	94.6
2016	123	70.3	3	2.4	19.4	10.5	46.3	100.0
2017	92	67.6	2	2.2	19.9	6.9	35.9	100.0
2018	54	61.4	1	1.9	20.1	5.9	33.3	100.0
2019	34	63.0			20.3	6.3	38.2	82.4 ##
1998–2019	3027	68.0	115	3.8	20.3	18.6	67.3	97.6

3,027 cases diagnosed 1998-2019 are related to a total of 2,980 patients. Currently, in 1,094 (36.7 %) of these 2,980 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 803 / 217 / 74 (26.9 % / 7.3 % / 2.5 %) patients exist having 2 / 3 / 4+ malignancies.

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 92 cases has been diagnosed, of which 19.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.9 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (FEMALES) (incl. DCO)

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	41	32.3	2	4.9	9.8	16.9	78.0	100.0
1999	52	38.5	4	7.7	11.8	16.9	80.8	98.1
2000	32	26.7			11.2	16.7	65.6	96.9
2001	40	30.3	2	5.0	11.5	16.4	75.0	97.5
2002	67	32.1	5	7.5	12.9	15.9	77.6	100.0 #
2003	61	27.6	4	6.6	12.6	16.1	77.0	98.4
2004	68	30.0	4	5.9	12.5	15.1	79.4	98.5
2005	61	32.3	4	6.6	13.0	14.6	78.7	95.1
2006	68	31.2	1	1.5	13.7	14.4	58.8	95.6
2007	78	29.8	4	5.1	12.7	13.9	66.7	93.6 #
2008	88	33.0	2	2.3	13.1	13.5	65.9	96.6
2009	97	34.9	2	2.1	13.8	12.8	57.7	96.9
2010	94	31.4	3	3.2	13.6	12.6	63.8	97.9
2011	83	34.0	2	2.4	14.3	11.4	44.6	96.4
2012	90	33.1	2	2.2	14.3	11.3	48.9	96.7
2013	95	31.5	1	1.1	14.9	11.1	50.5	95.8
2014	79	31.9	3	3.8	14.9	10.8	45.6	93.7
2015	78	31.7	1	1.3	14.9	10.0	55.1	97.4
2016	52	29.7	1	1.9	15.0	11.1	50.0	100.0
2017	44	32.4	2	4.5	15.8	10.5	34.1	100.0
2018	34	38.6	2	5.9	16.1	9.8	26.5	100.0
2019	20	37.0	1	5.0	16.0	10.5	25.0	75.0 ##
1998-2019	1422	32.0	52	3.7	16.0	16.9	60.1	96.8

1,422 cases diagnosed 1998-2019 are related to a total of 1,403 patients. Currently, in 443 (31.6 %) of these 1,403 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 342 / 79 / 22 (24.4 % / 5.6 % / 1.6 %) patients exist having 2 / 3 / 4+ malignancies.

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 44 cases has been diagnosed, of which 15.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 10.5 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	86	41	7.8	3.5	5.3	1.9	7.1	2.7	8.0	3.2
1999	83	52	7.4	4.4	4.8	2.6	6.6	3.5	7.0	3.9
2000	88	32	7.7	2.7	5.2	1.6	7.0	2.2	7.7	2.5
2001	92	40	7.9	3.3	5.1	1.7	7.1	2.5	8.2	2.8
2002	142	67	7.6	3.4	5.0	1.8	6.7	2.6	7.3	3.0
2003	160	61	8.5	3.1	5.6	1.7	7.7	2.4	8.3	2.8
2004	159	68	8.5	3.4	5.4	1.7	7.4	2.4	8.2	3.0
2005	128	61	6.8	3.1	4.3	1.7	5.8	2.4	6.5	2.6
2006	150	68	7.8	3.4	4.9	1.9	6.8	2.6	7.9	3.1
2007	184	78	8.3	3.4	5.2	1.8	7.2	2.5	8.0	3.0
2008	179	88	8.0	3.8	5.0	2.2	6.9	3.0	7.7	3.3
2009	181	97	8.1	4.2	4.9	2.2	6.8	3.1	7.6	3.6
2010	205	94	9.1	4.0	5.6	2.0	7.7	2.8	8.6	3.3
2011	161	83	7.2	3.6	4.3	1.8	5.9	2.5	6.6	2.9
2012	182	90	8.0	3.8	4.8	2.0	6.5	2.8	7.3	3.2
2013	207	95	9.0	4.0	5.3	2.0	7.3	2.7	8.2	3.2
2014	169	79	7.2	3.3	4.4	1.6	6.0	2.3	6.6	2.7
2015	168	78	7.1	3.2	4.0	1.6	5.6	2.3	6.4	2.6
2016	123	52	5.1	2.1	2.9	1.0	4.0	1.5	4.7	1.7
2017	92	44	3.8	1.8	2.0	0.9	2.9	1.3	3.4	1.4
2018	54	34	2.2	1.4	1.3	0.7	1.8	1.0	2.0	1.1
2019	34	20	1.4	0.8	0.7	0.4	1.0	0.6	1.3	0.6
1998-2019	3027	1422	6.9	3.1	4.2	1.6	5.7	2.3	6.4	2.6

The computation of the incidence measures includes all cancers, irrespective of first or subsequent malignancy.

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)
(incl. DCO)

Year of diagnosis	Cases n	Std.		Min.		Max.		Median		
		Mean	dev.			10%	25%	50%	75%	90%
1998	127	59.0	12.5	0.9	91.4	45.5	50.8	58.2	66.8	76.3
1999	135	60.4	12.3	25.6	95.7	47.1	53.1	59.0	66.8	75.7
2000	120	59.6	11.7	33.5	85.8	45.4	50.6	59.1	68.0	74.7
2001	132	62.5	12.5	33.7	94.3	48.5	53.0	60.8	70.8	79.9
2002	209	61.1	12.4	26.4	99.0	45.5	52.9	60.5	68.3	79.4
2003	221	60.4	11.8	28.1	98.2	46.2	53.1	59.6	66.5	77.1
2004	227	62.0	12.4	26.4	97.9	45.5	54.6	62.0	70.1	78.2
2005	189	61.4	12.7	4.1	98.7	46.4	53.4	61.0	66.9	80.5
2006	218	62.6	13.0	19.0	96.2	47.5	54.2	61.6	71.2	80.7
2007	262	61.9	12.4	26.0	101	46.1	53.7	61.3	70.3	76.9
2008	267	62.4	11.4	21.8	100	49.7	54.0	62.2	69.2	77.5
2009	278	62.8	12.3	29.6	98.4	47.5	54.8	62.6	71.3	79.9
2010	299	62.7	13.0	21.9	92.8	47.1	53.1	61.9	70.8	81.5
2011	244	62.9	13.0	27.0	96.9	47.6	54.2	63.6	72.0	78.3
2012	272	62.8	12.2	21.6	100	48.0	54.3	63.8	71.1	77.4
2013	302	64.1	11.8	28.1	95.5	49.8	56.1	64.0	71.8	79.4
2014	248	63.3	11.3	28.7	93.5	48.9	55.9	63.1	71.0	77.3
2015	246	64.0	11.7	28.5	93.2	50.3	55.3	63.5	72.3	80.3
2016	175	64.7	12.4	21.1	91.3	48.3	56.7	64.3	74.6	79.8
2017	136	66.7	12.9	30.1	96.5	50.9	57.9	66.2	74.8	84.9
2018	88	64.7	11.7	37.6	92.6	51.2	57.5	64.9	71.9	77.6
2019	54	67.7	10.1	50.8	99.0	55.8	59.7	67.0	74.4	81.2
1998-2019	4449	62.6	12.3	0.9	101	47.7	54.2	62.1	70.7	78.7

Table 3a

Age distribution parameters by year of diagnosis (MALES)
(incl. DCO)

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	86	57.1	11.7	0.9	81.3	45.5	50.8	57.0	62.2	72.2
1999	83	58.5	11.0	33.3	90.8	45.1	52.2	57.9	63.4	72.5
2000	88	58.9	10.7	35.8	85.5	45.7	50.6	58.8	67.5	72.8
2001	92	60.8	12.4	33.7	94.3	46.3	51.3	60.2	65.5	78.6
2002	142	58.8	10.7	26.4	92.2	45.2	51.7	59.7	64.5	71.9
2003	160	59.2	10.1	28.1	86.1	47.3	53.2	59.1	65.2	72.1
2004	159	60.0	11.2	29.7	88.7	45.2	53.3	60.2	66.2	74.7
2005	128	59.8	12.5	4.1	87.1	44.6	52.0	60.4	66.8	77.2
2006	150	61.9	12.0	23.9	92.0	47.4	53.8	60.4	69.4	77.9
2007	184	60.5	11.5	26.0	101	46.0	52.7	59.8	68.1	75.3
2008	179	61.8	10.7	21.8	100	49.7	53.9	61.9	68.3	75.2
2009	181	61.9	11.1	30.2	88.1	47.9	54.5	62.2	69.7	76.2
2010	205	61.0	12.2	24.5	92.8	46.5	52.1	60.1	69.0	76.2
2011	161	61.4	12.2	27.0	93.0	47.3	53.6	60.1	70.2	77.3
2012	182	61.6	11.3	21.6	87.9	48.0	52.7	62.3	70.0	75.3
2013	207	62.5	10.3	30.0	91.0	49.8	55.6	62.5	69.7	75.8
2014	169	61.9	10.6	28.7	93.5	47.9	55.0	61.4	69.7	74.8
2015	168	63.1	11.0	28.5	93.2	50.3	55.2	62.1	70.5	77.8
2016	123	63.7	12.1	21.1	89.1	49.2	56.2	63.4	73.4	78.5
2017	92	67.0	11.9	30.1	96.1	53.0	58.7	66.8	75.4	80.6
2018	54	63.9	11.4	37.6	92.6	51.2	57.4	64.7	70.0	77.3
2019	34	68.1	8.4	50.8	82.4	59.0	61.9	68.8	74.4	79.1
1998-2019	3027	61.3	11.4	0.9	101	47.5	53.4	60.9	68.9	76.3

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)
(incl. DCO)

Year of diagnosis	Cases n	Std.		Min.		Max.		Median		
		Mean	dev.			10%	25%	50%	75%	90%
1998	41	62.9	13.4	31.1	91.4	49.5	57.5	62.5	75.1	78.4
1999	52	63.5	13.8	25.6	95.7	48.3	55.6	65.2	71.1	77.6
2000	32	61.4	14.2	33.5	85.8	45.2	50.7	60.1	70.3	82.1
2001	40	66.4	12.0	44.0	92.5	51.3	57.0	63.9	71.9	85.9
2002	67	66.1	14.2	35.8	99.0	50.3	54.9	64.3	77.3	82.9
2003	61	63.6	15.1	32.6	98.2	45.7	51.7	61.5	76.1	81.2
2004	68	66.7	13.9	26.4	97.9	48.9	57.2	67.2	77.7	83.1
2005	61	64.7	12.8	33.0	98.7	50.8	57.2	62.3	68.5	83.7
2006	68	64.2	14.9	19.0	96.2	47.5	55.9	63.5	76.0	83.2
2007	78	65.1	13.7	34.0	98.2	47.5	55.3	63.6	73.6	83.6
2008	88	63.7	12.7	26.7	97.6	49.7	54.4	63.4	71.3	79.4
2009	97	64.6	14.2	29.6	98.4	47.4	55.5	64.9	75.1	82.8
2010	94	66.2	13.9	21.9	91.8	48.1	56.2	66.8	74.6	85.4
2011	83	65.8	14.0	31.2	96.9	48.6	56.5	67.3	75.1	84.0
2012	90	65.1	13.6	28.5	100	48.3	57.4	65.1	73.3	82.3
2013	95	67.6	14.0	28.1	95.5	47.4	59.0	67.5	76.3	86.9
2014	79	66.2	12.2	33.5	90.9	51.4	57.2	66.6	74.4	82.2
2015	78	65.8	13.0	28.9	90.3	49.1	55.8	67.4	74.1	83.8
2016	52	67.1	12.8	37.2	91.3	48.3	58.5	67.1	77.1	81.5
2017	44	66.0	15.0	34.7	96.5	48.2	55.8	65.4	74.1	88.3
2018	34	65.9	12.1	37.9	92.0	52.8	57.7	65.4	72.8	83.1
2019	20	67.0	12.7	51.3	99.0	53.8	57.7	62.8	73.4	86.0
1998-2019	1422	65.3	13.6	19.0	100	48.5	56.0	65.4	74.7	83.5

Table 4

Age distribution by 5-year age group and sex for period 2007–2019
(incl. DCO)

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0–4									
5–9									
10–14									
15–19									
20–24	5	0.2	0.2	4	0.2	0.2	1	0.1	0.1
25–29	13	0.5	0.6	8	0.4	0.6	5	0.5	0.6
30–34	23	0.8	1.4	10	0.5	1.1	13	1.4	2.0
35–39	32	1.1	2.5	23	1.2	2.3	9	1.0	3.0
40–44	78	2.7	5.3	54	2.8	5.1	24	2.6	5.6
45–49	202	7.0	12.3	144	7.4	12.5	58	6.2	11.8
50–54	356	12.4	24.7	267	13.8	26.3	89	9.5	21.4
55–59	451	15.7	40.4	332	17.1	43.4	119	12.8	34.1
60–64	440	15.3	55.7	320	16.5	59.9	120	12.9	47.0
65–69	430	15.0	70.7	290	15.0	74.9	140	15.0	62.0
70–74	366	12.7	83.5	230	11.9	86.7	136	14.6	76.6
75–79	226	7.9	91.3	147	7.6	94.3	79	8.5	85.1
80–84	121	4.2	95.5	62	3.2	97.5	59	6.3	91.4
85+	128	4.5	100.0	48	2.5	100.0	80	8.6	100.0
All ages	2871	100.0		1939	100.0		932	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007–2019

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid. %	Females Age- spec. incid. %	Males DCO rate n=64 %	Females DCO rate n=26 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4								
5- 9								
10-14								
15-19								
20-24	4	1	0.2	0.1			0.7	0.2
25-29	8	5	0.4	0.2			0.9	0.5
30-34	10	13	0.5	0.6			0.8	0.7
35-39	23	9	1.1	0.4			1.3	0.3
40-44	54	24	2.3	1.1			2.1	0.4
45-49	144	58	5.7	2.4	0.7		3.0	0.7
50-54	264	88	11.3	3.8	0.8		3.4	0.8
55-59	327	118	16.8	5.9	1.8	3.4	2.8	1.0
60-64	317	119	19.4	6.8	3.5	1.7	1.9	0.8
65-69	289	139	19.0	8.3	5.2	1.4	1.3	0.8
70-74	230	135	16.4	8.4	4.3	1.5	0.9	0.7
75-79	147	79	13.3	5.7	5.4	1.3	0.7	0.4
80-84	62	58	9.4	6.0	4.8	1.7	0.4	0.4
85+	48	80	11.3	8.3	16.7	17.5	0.5	0.5
All ages	1927	926			3.3	2.8	1.3	0.6
Incidence								
Raw			6.4	3.0				
WS			3.8	1.5				
ES			5.2	2.1				
BRD-S			5.9	2.5				

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

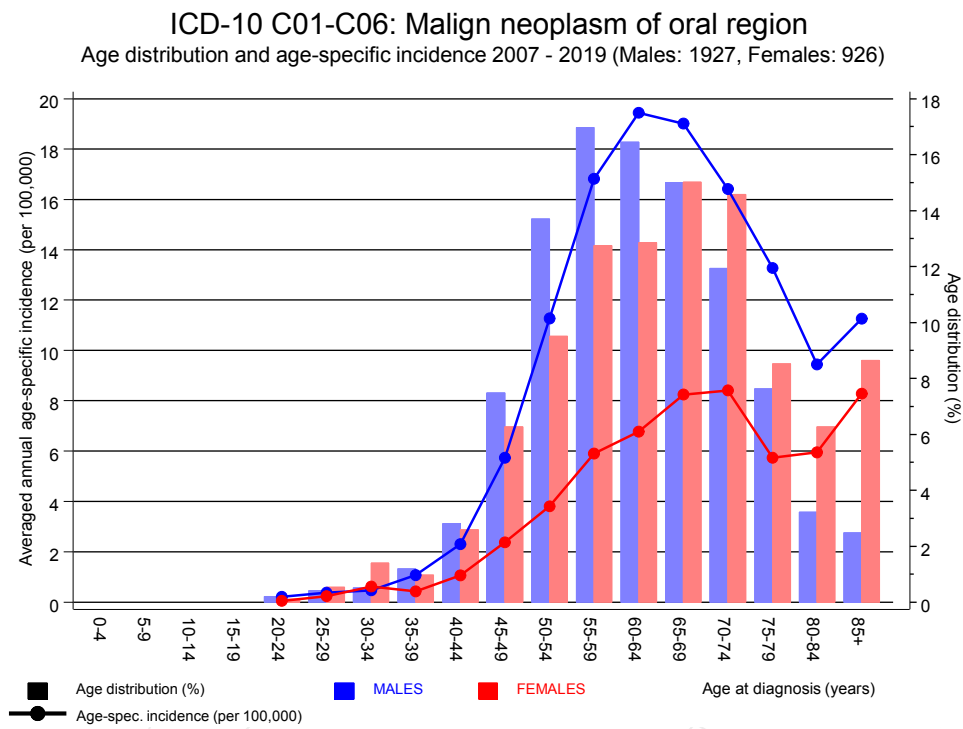


Figure 6. Age distribution (males: mean=62.3 yrs, median=62.2 yrs; females: mean=65.7 yrs, median=66.1 yrs) and age-specific incidence.

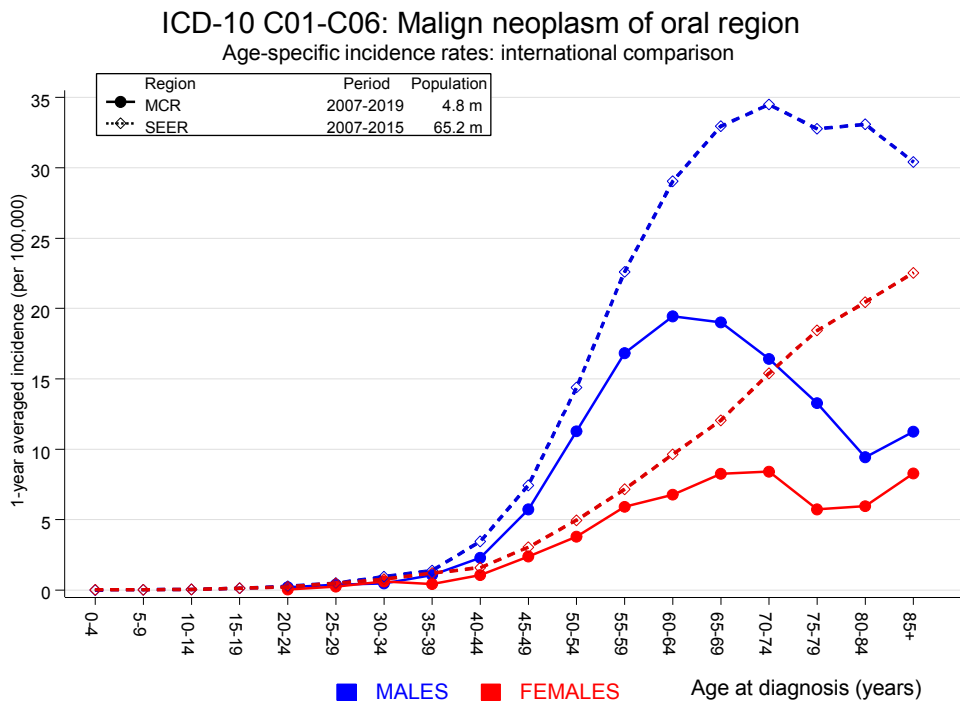


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 submission. <http://www.seer.cancer.gov>.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2019

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
	2	0.0	68.5	8.3	247.3 #	1.9	
C00 Lip	2	0.1	16.6	2.0	60.1 #	1.8	
C03-C06 Oral cavity	32	1.4	22.3	15.2	31.4 #	29.8	
C09-C10 Oropharynx	62	1.9	33.5	25.7	42.9 #	58.7	1.6
C11 Nasopharynx	2	0.1	16.8	2.0	60.7 #	1.8	
C12-C13 Hypopharynx	50	1.0	50.8	37.7	66.9 #	47.8	8.0
C14 ENT cancer	1	0.0	31.6	0.8	176.2	0.9	100.0
C15 Oesophagus	75	2.8	26.8	21.1	33.6 #	70.5	8.0
C16 Stomach	14	4.4	3.1	1.7	5.3 #	9.3	14.3
C17 Small intestine	3	0.8	3.9	0.8	11.4	2.2	33.3
C18 Colon	27	10.7	2.5	1.7	3.7 #	15.9	3.7
C19-C20 Rectum	16	6.9	2.3	1.3	3.8 #	8.9	
C21 Anus/canal	2	0.3	5.9	0.7	21.3	1.6	
C22 Liver	15	3.6	4.1	2.3	6.8 #	11.1	13.3
C23-C24 Bile	3	1.2	2.5	0.5	7.4	1.8	66.7
C25 Pancreas	13	4.5	2.9	1.5	4.9 #	8.3	7.7
C30-C31 Sinuses	4	0.2	16.2	4.4	41.5 #	3.7	25.0
C32 Larynx	36	1.5	24.3	17.0	33.7 #	33.7	16.7
C33-C34 Lung	159	15.0	10.6	9.0	12.4 #	140.5	11.9
C38,C45 Mesothelioma	2	0.8	2.6	0.3	9.4	1.2	
C40-C41 Bone	1	0.1	8.7	0.2	48.2	0.9	
C43 Malign. melanoma	14	5.8	2.4	1.3	4.0 #	8.0	7.1
C46,C49 Soft tissue	6	0.7	8.6	3.2	18.7 #	5.2	
C50 Breast	1	0.3	3.0	0.1	16.5	0.6	
C61 Prostate	49	34.5	1.4	1.1	1.9 #	14.1	4.1
C62 Testis	1	0.6	1.8	0.0	10.0	0.4	
C64 Kidney	18	4.5	4.0	2.3	6.3 #	13.1	
C65 Renal pelvis	1	0.5	2.1	0.1	11.6	0.5	
C67 Bladder	17	4.9	3.5	2.0	5.6 #	11.8	5.9
C68 Urethra	1	0.1	9.6	0.2	53.3	0.9	
C70-C72 CNS cancer	3	1.7	1.7	0.4	5.1	1.2	
C73 Thyroid	6	1.1	5.4	2.0	11.8 #	4.8	
C76-C79 CUP	13	2.0	6.5	3.5	11.1 #	10.7	
C81 Hodgkin lymphoma	2	0.3	6.0	0.7	21.8	1.6	50.0
C82-C85 NHL	16	5.0	3.2	1.8	5.2 #	10.7	18.8
C91-C96 Leukaemia	6	1.7	3.6	1.3	7.9 #	4.2	16.7
Not observed	0	3.2	0.0	0.0	1.2	-3.1	
All further malignancies	675	124.5	5.4	5.0	5.8 #	537.3	8.3

Patients 2875
 Median age at next malignancy (years) 64.9
 Person-years 10246
 Mean observation time (years) 3.6
 Median observation time (years) 2.0

The occurrence of further specified malignancy is statistically significant.

Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2019

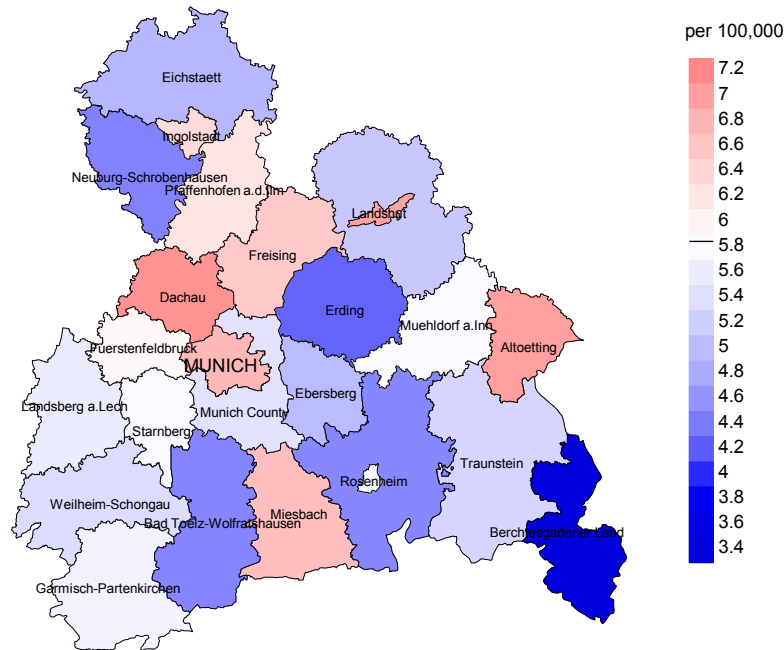
FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	16	0.3	45.7	26.1	74.3 #	29.1	
C09-C10 Oropharynx	23	0.3	87.2	55.3	130.8 #	42.3	
C12-C13 Hypopharynx	13	0.1	188.5	100.4	322.3 #	24.0	30.8
C14 ENT cancer	2	0.0	237.2	28.7	856.7 #	3.7	100.0
C15 Oesophagus	15	0.4	39.5	22.1	65.1 #	27.2	13.3
C16 Stomach	6	1.8	3.3	1.2	7.1 #	7.8	16.7
C18 Colon	8	5.2	1.5	0.7	3.0	5.2	
C19-C20 Rectum	7	2.2	3.2	1.3	6.5 #	8.9	
C22 Liver	7	0.7	10.3	4.1	21.2 #	11.8	
C23-C24 Bile	3	0.8	4.0	0.8	11.7	4.2	
C25 Pancreas	7	2.5	2.8	1.1	5.7 #	8.4	14.3
C30-C31 Sinuses	5	0.1	63.2	20.5	147.5 #	9.2	40.0
C32 Larynx	8	0.1	72.7	31.4	143.3 #	14.7	25.0
C33-C34 Lung	60	4.4	13.5	10.3	17.4 #	103.3	16.7
C43 Malign. melanoma	3	2.2	1.4	0.3	4.0	1.5	
C50 Breast	29	17.9	1.6	1.1	2.3 #	20.6	3.4
C51 Vulva	3	0.6	5.2	1.1	15.3 #	4.5	
C53 Cervix uteri	5	0.8	6.5	2.1	15.2 #	7.9	20.0
C54 Corpus uteri	4	3.2	1.2	0.3	3.2	1.4	
C56 Ovary	3	2.3	1.3	0.3	3.8	1.3	
C67 Bladder	5	1.0	4.8	1.5	11.1 #	7.3	40.0
C70-C72 CNS cancer	2	0.7	2.7	0.3	9.6	2.3	50.0
C73 Thyroid	4	1.0	3.9	1.1	10.1 #	5.5	
C76-C79 CUP	6	1.0	6.1	2.2	13.2 #	9.3	
C82-C85 NHL	11	2.2	5.1	2.5	9.1 #	16.4	
Others, specified	12	3.9	3.1	1.6	5.4 #	15.0	
Not observed	0	1.4	0.0	0.0	2.6	-2.6	
All further malignancies	267	57.2	4.7	4.1	5.3 #	390.2	10.9
Patients		1342					
Median age at next malignancy (years)		68.4					
Person-years		5378					
Mean observation time (years)		4.0					
Median observation time (years)		2.3					

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 are pooled in category "Others, specified".

Average incidence (Germany 1987 standard population) 2007 - 2019: Males



Average incidence (Germany 1987 standard population) 2007 - 2019: Females

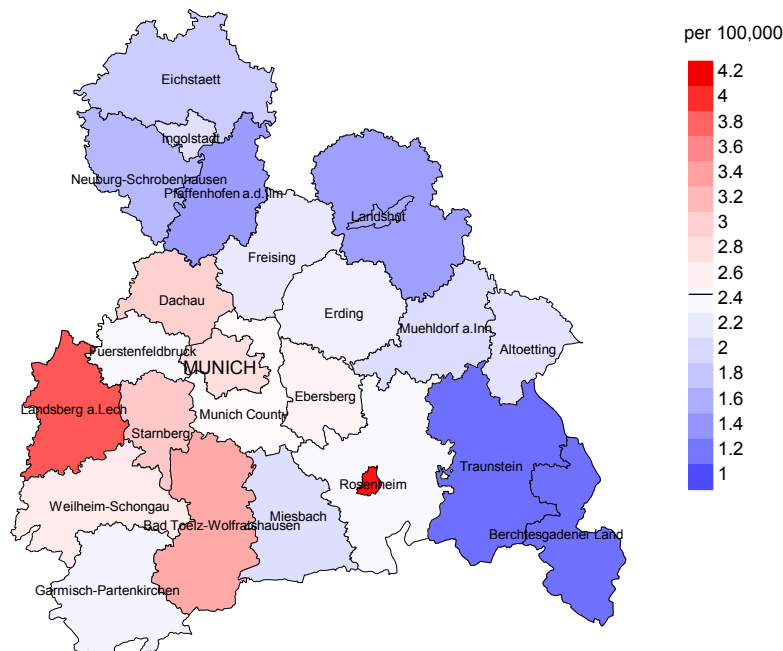
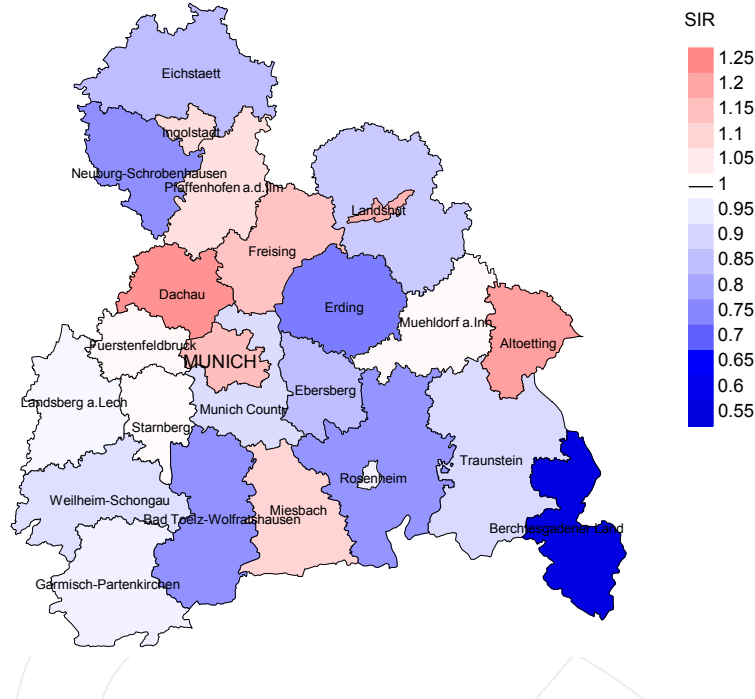


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 5.9/100,000 WS N=1,927, females 2.5/100,000 WS N=926).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 28 women were identified with newly diagnosed oral region cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.6/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.5 and 4.2/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

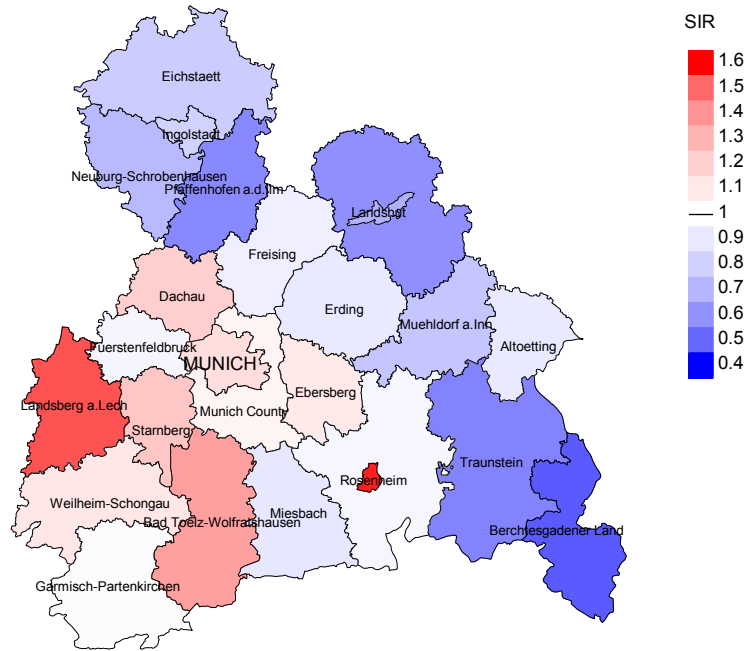


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,927, females N=926).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 28 women were identified with newly diagnosed oral region cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.10. Though, the value of this parameter may vary with an underlying probability of 99% between 0.64 and 1.75, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	127	99.2	5.5	106	83.5	93.4
1999	135	96.3	4.4	112	83.0	87.5
2000	120	98.3	5.0	93	77.5	97.8
2001	132	98.5	6.1	111	84.1	93.7
2002	209	98.1	5.7	166	79.4	95.2
2003	221	99.5	6.3	179	81.0	96.1
2004	227	97.4	4.4	173	76.2	96.0
2005	189	95.8	4.8	142	75.1	95.1
2006	218	96.3	2.3	166	76.1	94.0
2007	262	93.5	4.2	187	71.4	96.3
2008	267	97.8	3.0	186	69.7	95.2
2009	278	97.5	1.8	187	67.3	93.0
2010	299	98.7	4.7	198	66.2	94.9
2011	244	97.5	2.9	142	58.2	93.0
2012	272	98.2	3.3	143	52.6	90.2
2013	302	98.0	2.3	167	55.3	91.6
2014	248	96.4	4.0	133	53.6	92.5
2015	246	95.5	2.8	124	50.4	90.3
2016	175	100.0	2.3	83	47.4	89.2
2017	136	100.0	2.9	48	35.3	58.3
2018	88	100.0	3.4	27	30.7	63.0
2019	54	79.6	1.9	18	33.3	88.9
1998-2019	4449	97.3	3.8	2891	65.0	92.8

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	127	74	93.2	16	12.6
1999	135	69	89.9	12	8.9
2000	120	84	92.9	15	12.5
2001	132	113	92.0	25	18.9
2002	209	149	98.0	32	15.3
2003	221	159	97.5	35	15.8
2004	227	160	96.9	42	18.5
2005	189	143	98.6	24	12.7
2006	218	175	95.4	32	14.7
2007	262	159	97.5	33	12.6
2008	267	160	98.1	34	12.7
2009	278	212	97.6	30	10.8
2010	299	198	99.5	41	13.7
2011	244	201	97.0	27	11.1
2012	272	202	97.5	31	11.4
2013	302	194	99.0	47	15.6
2014	248	191	97.9	39	15.7
2015	246	190	98.4	29	11.8
2016	175	192	100.0	33	18.9
2017	136	196	94.9	18	13.2
2018	88	121	33.9	10	11.4
2019	54	100	45.0	9	16.7
1998–2019	4449	3442	93.4	614	13.8

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates
(incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	74	74.3	25.7	91.3
1999	69	63.8	36.2	83.9
2000	84	64.3	35.7	82.1
2001	113	80.5	19.5	93.3
2002	149	78.5	21.5	91.8
2003	159	73.6	26.4	86.5
2004	160	78.8	21.3	91.0
2005	143	89.5	10.5	95.7
2006	175	74.9	25.1	86.2
2007	159	78.0	22.0	89.7
2008	160	80.0	20.0	91.7
2009	212	79.7	20.3	87.4
2010	198	79.8	20.2	90.9
2011	201	76.6	23.4	85.6
2012	202	77.2	22.8	88.8
2013	194	77.3	22.7	88.5
2014	191	74.9	25.1	84.5
2015	190	68.4	31.6	82.9
2016	192	76.0	24.0	82.8
2017	196	73.0	27.0	82.8
2018	121	41.3	58.7	70.7
2019	100	43.0	57.0	82.2
1998–2019	3442	74.3	25.7	87.4

Table 10a

Medians of age at death according to the grouping in Table 9
MALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	53	60.6	59.8	63.3	60.7
1999	51	57.4	57.5	57.2	56.0
2000	66	63.2	62.0	65.5	63.2
2001	85	61.4	60.5	66.8	61.2
2002	108	62.0	61.6	63.7	61.6
2003	116	63.3	63.5	62.5	63.9
2004	117	63.8	62.4	68.0	63.5
2005	90	65.4	65.1	74.5	65.3
2006	122	64.0	63.7	66.7	63.9
2007	119	63.5	62.2	66.9	63.0
2008	113	63.2	62.6	66.2	62.6
2009	150	65.9	65.1	69.3	65.2
2010	140	66.1	64.7	69.6	65.3
2011	149	67.1	65.0	71.6	64.6
2012	146	67.5	66.1	70.7	65.8
2013	127	66.6	65.4	73.8	65.9
2014	132	68.9	67.6	72.6	67.8
2015	132	66.9	66.5	69.8	66.6
2016	124	67.3	66.3	72.3	66.3
2017	140	68.4	68.3	69.4	67.8
2018	81	68.9	68.5	70.5	71.3
2019	68	72.3	71.1	73.0	72.9
1998-2019	2429	65.4	64.6	69.2	64.8

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 10b

Medians of age at death according to the grouping in Table 9
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	21	61.6	61.6	64.7	61.6
1999	18	71.3	59.7	82.3	61.0
2000	18	70.4	67.6	85.4	70.4
2001	28	71.4	69.6	74.4	71.0
2002	41	73.6	71.9	82.9	73.4
2003	43	69.6	63.2	72.7	65.7
2004	43	73.7	73.7	73.2	73.0
2005	53	67.5	65.5	89.3	66.8
2006	53	69.8	66.6	79.5	66.6
2007	40	74.5	74.8	74.2	71.4
2008	47	72.2	69.6	72.5	69.5
2009	62	70.4	68.9	83.9	69.9
2010	58	73.0	69.0	84.1	70.0
2011	52	73.4	71.9	74.7	71.3
2012	56	72.1	69.5	82.7	69.5
2013	67	76.3	73.5	86.4	74.0
2014	59	74.3	70.5	79.0	73.0
2015	58	72.3	71.7	73.3	71.7
2016	68	75.8	74.9	85.1	75.2
2017	56	75.4	72.9	82.9	73.1
2018	40	72.7	71.7	75.4	71.7
2019	32	77.7	79.4	76.5	79.0
1998-2019	1013	73.0	70.6	79.3	71.3

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 years for girls.

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 11a

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death

MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	40	3.6	0.47	2.4	0.45	3.2	0.45	3.8	0.47
1999	34	3.0	0.41	1.9	0.41	2.7	0.42	3.0	0.44
2000	43	3.8	0.49	2.3	0.45	3.4	0.48	4.3	0.56
2001	69	6.0	0.76	3.8	0.76	5.3	0.76	6.1	0.76
2002	84	4.5	0.59	2.8	0.56	4.0	0.59	4.6	0.63
2003	89	4.7	0.56	2.9	0.52	4.0	0.53	4.6	0.56
2004	93	4.9	0.58	3.1	0.57	4.3	0.58	4.9	0.59
2005	80	4.2	0.63	2.4	0.57	3.5	0.60	4.2	0.64
2006	93	4.9	0.62	3.0	0.61	4.1	0.60	4.7	0.60
2007	95	4.3	0.52	2.6	0.50	3.7	0.51	4.1	0.52
2008	97	4.4	0.54	2.6	0.51	3.6	0.52	4.2	0.55
2009	122	5.5	0.69	3.1	0.65	4.4	0.66	5.1	0.68
2010	110	4.9	0.54	2.8	0.50	4.0	0.52	4.6	0.55
2011	113	5.1	0.71	2.8	0.67	4.1	0.69	4.8	0.73
2012	115	5.1	0.63	2.7	0.57	3.9	0.60	4.6	0.63
2013	99	4.3	0.48	2.4	0.46	3.4	0.46	4.0	0.48
2014	104	4.5	0.62	2.4	0.55	3.4	0.57	4.0	0.61
2015	91	3.8	0.54	2.0	0.51	2.9	0.52	3.5	0.55
2016	93	3.9	0.76	2.1	0.73	3.0	0.75	3.5	0.76
2017	104	4.3	1.14	2.2	1.12	3.2	1.13	3.8	1.14
2018	37	1.5	0.69	0.8	0.65	1.2	0.66	1.4	0.69
2019	30	1.2	0.88	0.6	0.78	0.9	0.81	1.1	0.87
1998-2019	1835	4.2	0.61	2.4	0.57	3.3	0.59	3.9	0.61

Table 11b

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
FEMALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	15	1.3	0.38	0.7	0.37	1.0	0.38	1.2	0.37
1999	10	0.8	0.19	0.5	0.18	0.6	0.18	0.7	0.19
2000	11	0.9	0.34	0.5	0.30	0.7	0.31	0.8	0.32
2001	22	1.8	0.55	0.9	0.51	1.2	0.50	1.6	0.56
2002	33	1.7	0.49	0.8	0.43	1.1	0.44	1.4	0.47
2003	28	1.4	0.46	0.8	0.44	1.1	0.45	1.3	0.46
2004	33	1.7	0.49	0.7	0.42	1.1	0.45	1.4	0.47
2005	48	2.4	0.79	1.2	0.69	1.7	0.73	2.0	0.77
2006	38	1.9	0.56	0.9	0.45	1.2	0.48	1.5	0.49
2007	29	1.3	0.37	0.5	0.28	0.8	0.30	1.0	0.33
2008	31	1.3	0.36	0.6	0.30	0.9	0.31	1.1	0.33
2009	47	2.0	0.49	0.9	0.43	1.4	0.44	1.6	0.45
2010	48	2.1	0.52	1.0	0.48	1.4	0.50	1.6	0.51
2011	41	1.8	0.49	0.7	0.41	1.1	0.42	1.2	0.42
2012	41	1.7	0.46	0.8	0.40	1.1	0.41	1.3	0.42
2013	51	2.1	0.54	0.9	0.45	1.3	0.47	1.6	0.52
2014	40	1.7	0.51	0.7	0.43	1.0	0.45	1.2	0.47
2015	39	1.6	0.51	0.7	0.40	1.0	0.43	1.2	0.47
2016	53	2.2	1.02	0.8	0.75	1.2	0.82	1.6	0.90
2017	39	1.6	0.89	0.6	0.66	0.9	0.71	1.1	0.79
2018	13	0.5	0.38	0.2	0.34	0.4	0.36	0.4	0.37
2019	14	0.6	0.70	0.2	0.41	0.3	0.47	0.4	0.58
1998-2019	724	1.6	0.51	0.7	0.43	1.0	0.45	1.2	0.48

Table 12

Age distribution of age at death (cancer-related) for period 2007-2019
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	2	0.1	0.1	1	0.1	0.1	1	0.2	0.2
30-34	3	0.2	0.3	2	0.2	0.2	1	0.2	0.4
35-39	7	0.4	0.7	4	0.3	0.6	3	0.6	1.0
40-44	26	1.5	2.2	20	1.7	2.2	6	1.2	2.3
45-49	60	3.5	5.8	49	4.0	6.3	11	2.3	4.5
50-54	147	8.7	14.4	124	10.2	16.5	23	4.7	9.3
55-59	215	12.7	27.1	174	14.4	30.9	41	8.4	17.7
60-64	254	15.0	42.1	197	16.3	47.2	57	11.7	29.4
65-69	294	17.3	59.4	221	18.3	65.5	73	15.0	44.4
70-74	259	15.3	74.7	180	14.9	80.3	79	16.3	60.7
75-79	192	11.3	86.0	137	11.3	91.7	55	11.3	72.0
80-84	102	6.0	92.0	58	4.8	96.4	44	9.1	81.1
85+	135	8.0	100.0	43	3.6	100.0	92	18.9	100.0
All ages	1696	100.0		1210	100.0		486	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007–2019
(incl. multiple malignancies)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Females Age- spec. mortal.	Males MI-index	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1	1	0.0	0.13	0.0	0.20	1.2	1.1
30-34	2	1	0.1	0.20	0.0	0.08	1.6	0.6
35-39	4	3	0.2	0.17	0.1	0.33	1.6	0.8
40-44	20	6	0.9	0.37	0.3	0.25	3.5	0.7
45-49	49	11	2.0	0.34	0.5	0.19	3.7	0.7
50-54	124	23	5.3	0.47	1.0	0.26	4.9	0.9
55-59	174	41	8.9	0.53	2.1	0.35	4.2	1.2
60-64	197	57	12.1	0.62	3.2	0.48	3.3	1.2
65-69	221	73	14.5	0.76	4.3	0.53	2.6	1.1
70-74	180	79	12.8	0.78	4.9	0.59	1.6	1.0
75-79	137	55	12.4	0.93	4.0	0.70	1.2	0.6
80-84	58	44	8.8	0.94	4.5	0.76	0.6	0.5
85+	43	92	10.1	0.90	9.5	1.15	0.5	0.8
All ages	1210	486					1.9	0.9
Mortality								
Raw			4.0	0.63	1.6	0.52		
WS			2.2	0.58	0.7	0.43		
ES			3.1	0.60	1.0	0.45		
BRD-S			3.7	0.63	1.2	0.48		
PYLL-70								
per 100,000			31.2		8.1			
ES			26.6		6.7			
AYLL-70			10.4		9.8			

Table 14a

Further malignancies in deaths in period 1998-2019

MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	5	0.4	3	60.0	1	20.0	1	20.0
C03-C06 Oral cavity	45	4.0	19	42.2	5	11.1	21	46.7
C07-C08 Salivary gland	2	0.2	1	50.0			1	50.0
C09-C10 Oropharynx	105	9.4	53	50.5	16	15.2	36	34.3
C12-C13 Hypopharynx	82	7.3	31	37.8	12	14.6	39	47.6
C15 Oesophagus	108	9.7	19	17.6	18	16.7	71	65.7
C16 Stomach	21	1.9	3	14.3			18	85.7
C17 Small intestine	5	0.4	3	60.0			2	40.0
C18 Colon	35	3.1	11	31.4	3	8.6	21	60.0
C19-C20 Rectum	32	2.9	8	25.0	1	3.1	23	71.9
C21 Anus/canal	3	0.3	2	66.7			1	33.3
C22 Liver	28	2.5	5	17.9	3	10.7	20	71.4
C23-C24 Bile	4	0.4	1	25.0			3	75.0
C25 Pancreas	17	1.5	3	17.6			14	82.4
C30-C31 Sinuses	10	0.9	5	50.0			5	50.0
C32 Larynx	71	6.4	38	53.5	13	18.3	20	28.2
C33-C34 Lung	233	20.9	29	12.4	26	11.2	178	76.4
C38,C45 Mesothelioma	3	0.3	1	33.3			2	66.7
C43 Malign. melanoma	19	1.7	10	52.6	2	10.5	7	36.8
C44 Skin others	75	6.7	35	46.7	7	9.3	33	44.0
C46,C49 Soft tissue	7	0.6	4	57.1			3	42.9
C50 Breast	2	0.2	2	100.0				
C61 Prostate	57	5.1	29	50.9	3	5.3	25	43.9
C62 Testis	8	0.7	8	100.0				
C63 Male urogen.	2	0.2	2	100.0				
C64 Kidney	22	2.0	8	36.4	2	9.1	12	54.5
C65 Renal pelvis	3	0.3	1	33.3			2	66.7
C67 Bladder	30	2.7	16	53.3	1	3.3	13	43.3
C70-C72 CNS cancer	5	0.4					5	100.0
C73 Thyroid	8	0.7	4	50.0	1	12.5	3	37.5
C76-C79 CUP	33	3.0	18	54.5	3	9.1	12	36.4
C81 Hodgkin lymphoma	4	0.4	2	50.0			2	50.0
C82-C85 NHL	20	1.8	9	45.0	3	15.0	8	40.0
C91-C96 Leukaemia	8	0.7	2	25.0	1	12.5	5	62.5
Others, specified	4	0.4	2	50.0			2	50.0
All further malignancies	1116	100.0	387	34.7	121	10.8	608	54.5

Further malignancies with number of cases 1 are pooled in category "Others, specified".

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	1	0.3					1	100.0
C03-C06 Oral cavity	22	6.0	3	13.6	3	13.6	16	72.7
C09-C10 Oropharynx	33	9.0	9	27.3	5	15.2	19	57.6
C12-C13 Hypopharynx	12	3.3	1	8.3	4	33.3	7	58.3
C14 ENT cancer	3	0.8			1	33.3	2	66.7
C15 Oesophagus	28	7.6	4	14.3	2	7.1	22	78.6
C16 Stomach	8	2.2	1	12.5	2	25.0	5	62.5
C18 Colon	16	4.4	7	43.8			9	56.3
C19-C20 Rectum	5	1.4	1	20.0			4	80.0
C21 Anus/canal	3	0.8					3	100.0
C22 Liver	7	1.9	1	14.3	1	14.3	5	71.4
C23-C24 Bile	3	0.8					3	100.0
C25 Pancreas	7	1.9	1	14.3			6	85.7
C30-C31 Sinuses	6	1.6	2	33.3			4	66.7
C32 Larynx	11	3.0	4	36.4	2	18.2	5	45.5
C33-C34 Lung	67	18.3	3	4.5	6	9.0	58	86.6
C40-C41 Bone	1	0.3					1	100.0
C43 Malign. melanoma	6	1.6	2	33.3	1	16.7	3	50.0
C44 Skin others	19	5.2	6	31.6	2	10.5	11	57.9
C46,C49 Soft tissue	1	0.3					1	100.0
C50 Breast	49	13.4	30	61.2	4	8.2	15	30.6
C51 Vulva	2	0.5	1	50.0			1	50.0
C52 Vagina	1	0.3	1	100.0				
C53 Cervix uteri	14	3.8	10	71.4			4	28.6
C54 Corpus uteri	5	1.4	4	80.0			1	20.0
C55,C57 Fem. genitals un	1	0.3	1	100.0				
C56 Ovary	7	1.9	4	57.1			3	42.9
C64 Kidney	1	0.3					1	100.0
C67 Bladder	4	1.1	1	25.0			3	75.0
C70-C72 CNS cancer	2	0.5					2	100.0
C73 Thyroid	1	0.3	1	100.0				
C76-C79 CUP	10	2.7	4	40.0			6	60.0
C81 Hodgkin lymphoma	1	0.3					1	100.0
C82-C85 NHL	8	2.2	1	12.5	2	25.0	5	62.5
C90 Mult. myeloma	1	0.3					1	100.0
C91-C96 Leukaemia	1	0.3	1	100.0				
All further malignancies	367	100.0	104	28.3	35	9.5	228	62.1

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(First primaries only *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Females Age- spec. mortal.	Males MI-index	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1	1	0.0	0.13	0.0	0.20	1.3	1.2
30-34	2	1	0.1	0.20	0.0	0.09	1.6	0.7
35-39	3	2	0.1	0.15	0.1	0.33	1.3	0.6
40-44	17	6	0.7	0.35	0.3	0.25	3.2	0.9
45-49	40	9	1.6	0.31	0.4	0.18	3.3	0.7
50-54	99	17	4.2	0.46	0.7	0.23	4.5	0.8
55-59	134	35	6.9	0.55	1.8	0.37	3.7	1.2
60-64	144	44	8.8	0.63	2.5	0.47	2.9	1.2
65-69	166	55	10.9	0.81	3.3	0.53	2.4	1.1
70-74	126	64	9.0	0.81	4.0	0.60	1.5	1.0
75-79	94	46	8.5	1.03	3.3	0.73	1.1	0.7
80-84	36	36	5.5	1.03	3.7	0.82	0.5	0.5
85+	32	76	7.5	0.97	7.9	1.15	0.5	0.9
All ages	894	392					1.8	0.9
Mortality								
Raw			3.0	0.63	1.3	0.53		
WS			1.7	0.58	0.5	0.42		
ES			2.3	0.60	0.8	0.45		
BRD-S			2.7	0.63	0.9	0.48		
PYLL-70								
per 100,000			24.4		6.6			
ES			20.8		5.4			
AYLL-70			10.7		10.1			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1	1	0.0	0.14	0.0	0.20	1.3	1.2
30-34	1	1	0.0	0.10	0.0	0.10	0.8	0.7
35-39	3		0.1	0.15			1.3	
40-44	15	6	0.6	0.38	0.3	0.26	2.9	0.9
45-49	34	9	1.4	0.31	0.4	0.20	2.8	0.7
50-54	79	15	3.4	0.43	0.6	0.23	3.6	0.7
55-59	91	29	4.7	0.42	1.5	0.37	2.6	1.0
60-64	93	31	5.7	0.46	1.8	0.36	1.9	0.8
65-69	103	37	6.8	0.63	2.2	0.44	1.5	0.7
70-74	87	40	6.2	0.70	2.5	0.45	1.1	0.7
75-79	55	28	5.0	0.68	2.0	0.55	0.7	0.4
80-84	23	27	3.5	0.72	2.8	0.68	0.4	0.4
85+	28	62	6.6	0.97	6.4	1.03	0.5	0.7
All ages	613	286					1.3	0.7
Mortality								
Raw			2.0	0.50	0.9	0.44		
WS			1.1	0.47	0.4	0.36		
ES			1.6	0.48	0.6	0.38		
BRD-S			1.8	0.50	0.7	0.40		
PYLL-70								
per 100,000			18.2		5.3			
ES			15.5		4.4			
AYLL-70			11.5		10.8			

* See corresponding tables with multiple malignancies.

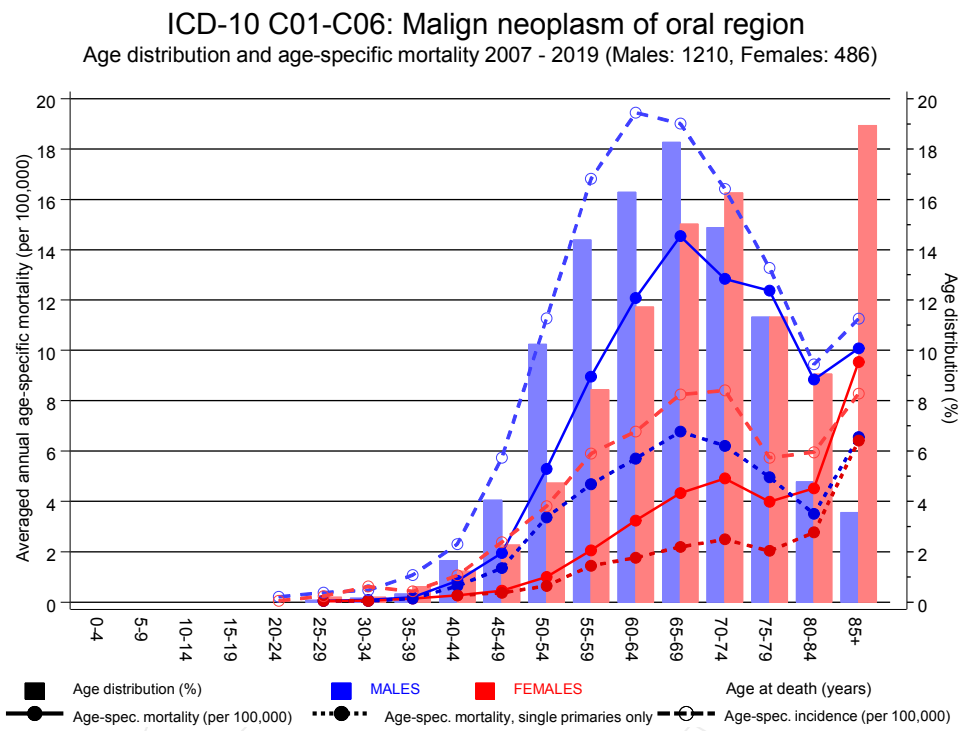
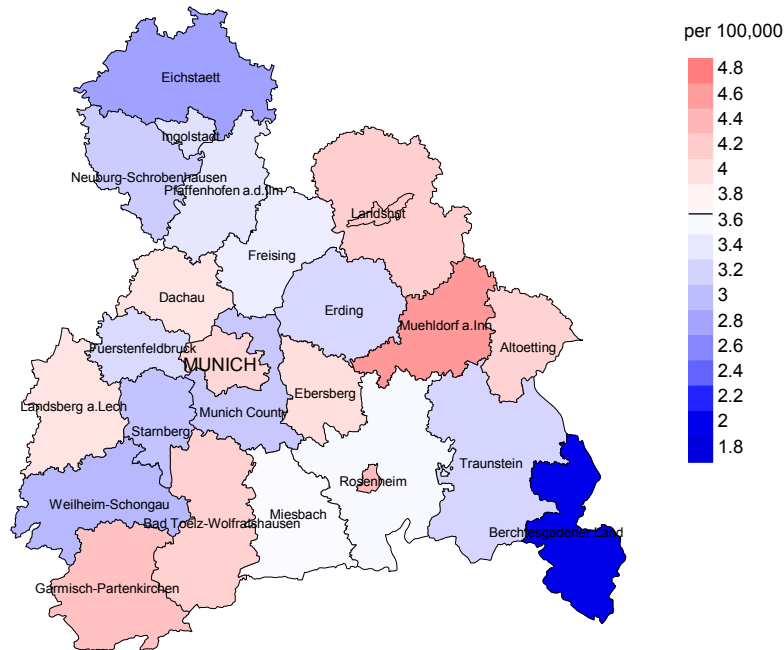


Figure 17. Distribution of age at death (bars; males: mean=61.2 yrs, median=60.5 yrs; females: mean=67.4 yrs, median=67.7 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at oral region cancer-related death (see Table 10) should be considered.

Average mortality (Germany 1987 standard population) 2007 - 2019: Males



Average mortality (Germany 1987 standard population) 2007 - 2019: Females

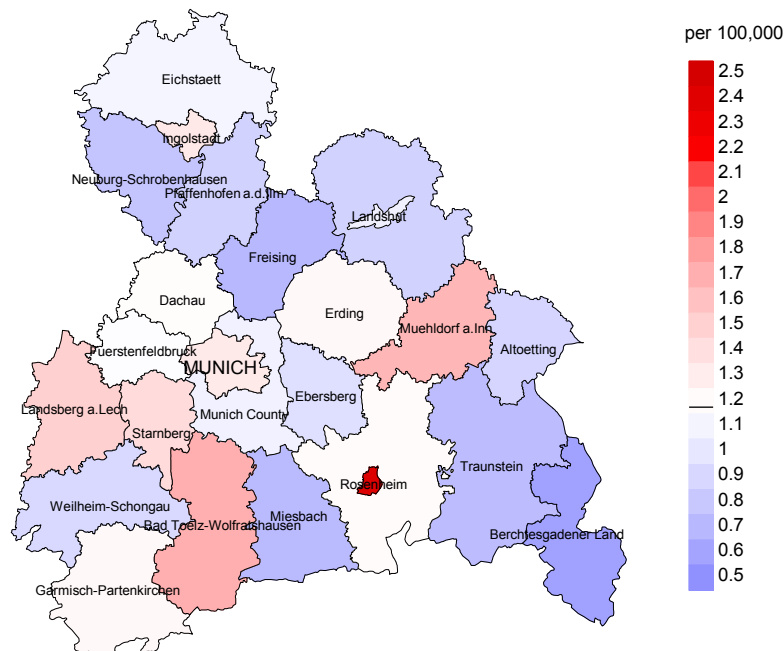
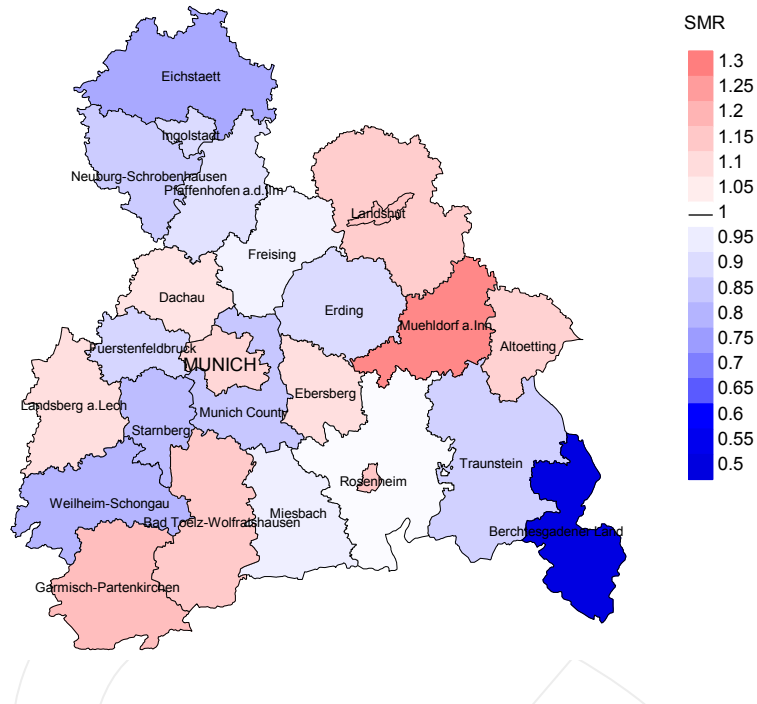


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 3.7/100,000 WS N=1,210, females 1.2/100,000 WS N=486).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 11 women died from oral region cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.9/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.4 and 2.1/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

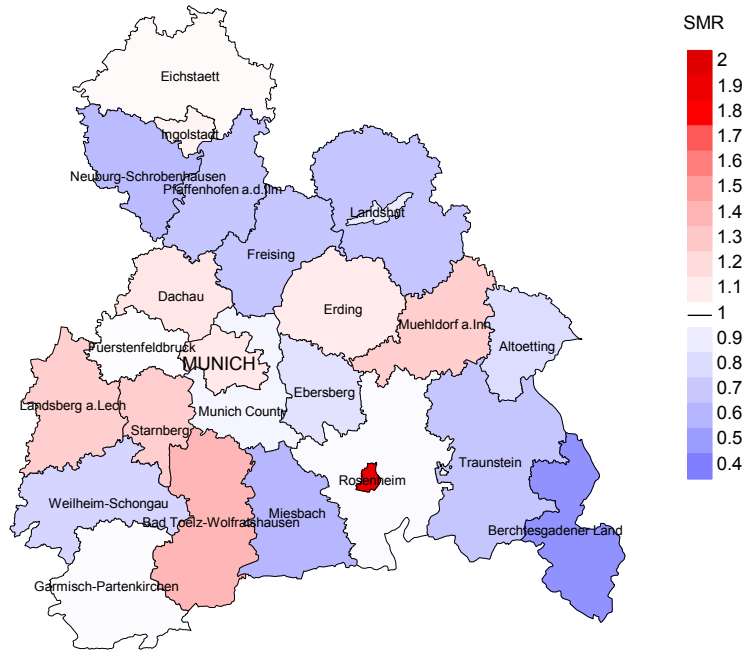


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,210, females N=486).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 11 women died from oral region cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.84. Though, the value of this parameter may vary with an underlying probability of 99% between 0.33 and 1.73, and is therefore not statistically striking.

Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. All multiple primaries included

The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. First singular primary (no information about other prior or synchronous malignancy)

The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. Single primary (no information about other prior, syn- or metachronous malignancy)

The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head&neck and lung).

The ratio of mortality and incidence (mortality-to-incidence ratio, **MIR, MI-Index**) is a statistical index that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MIR. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

MCR	Munich Cancer Registry (Tumorregister München)
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
SEER	Surveillance, Epidemiology, and End Results (USA)
DCO	Death certificate only
BRD-S	German (FRG) standard population
ES	European standard population (old)
WS	World standard population
SIR	Standardized incidence ratio
CI	Confidence interval
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
SMR	Standardized mortality ratio
MI-index	Ratio of mortality to incidence, MIR
FRG	Federal Republic of Germany

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